

## **REMARKS**

Claims 1-33 and 37-52 are pending in the application. Claims 1, 14, 28-30 and 37 are currently amended. Claims 34-36 have been cancelled. Applicants respectfully request for allowance of all the pending claims, based on following discussions.

### **Claim Objections**

Claims 28-30 are objected to for certain informalities. In response, claims 28-30 are amended to correct the informalities. Thus, Applicants respectfully request that the objections to claims 28-30 be withdrawn.

Claims 37-41 are objected to because claim 37 depends on cancelled claim 36 and claims 38-41 depend either directly or indirectly from claim 37. In response, claim 37 is amended to depend on claim 1, instead of cancelled claim 36. Thus, Applicants respectfully request that the objections to claims 37-41 be withdrawn.

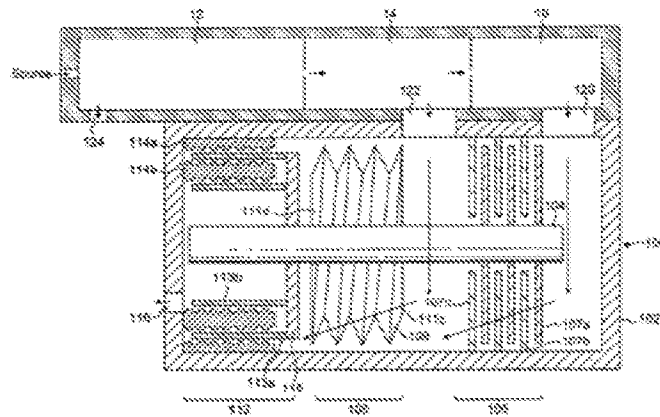
### **Rejections under 35 U.S.C. 103**

Claims 1-33 and 37-52 are rejected under 35 USC 103(a) as being unpatentable over US Patent No. 5,707,213 to Conrad (hereinafter referred to as “Conrad”) in view of US Patent No. 6,394,747 to Hablanian (hereinafter referred to as “Hablanian”) and US Patent No. 5,553,998 to Muhlhoff et al. (hereinafter referred to as “Muhlhoff”).

Independent claim 1 is directed to a vacuum pump comprising a first pumping section, a second pumping section downstream from the first pumping section, a third pumping section downstream from the second pumping section, a first pump inlet through which fluid can enter the pump and pass through each of the pumping sections towards a pump outlet, and a second pump inlet through which fluid can enter the pump and pass through only the second and the third pumping sections towards the outlet,

wherein the third pumping section comprises a helical groove formed in a stator thereof, at least one of the first and second pumping sections comprises a helical groove formed in a rotor thereof, and the first and second pumping sections are sized substantially the same in a radial direction, such that the first or second pumping section that has the helical groove formed in the rotor thereof is able to increase a pumping capacity without a corresponding increase in size, wherein the first and second pump inlets are in fluid connection with a common source of fluid stream evacuated from an equipment chamber. It is noted that the underlined language is added to the claim by the current amendment.

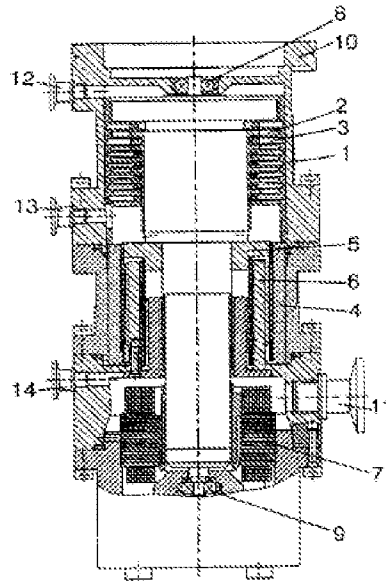
The added limitation “the first and second pump inlets are in fluid connection with a common source of fluid stream evacuated from an equipment chamber” is supported by the specification. For example, as shown in FIG. 2 of the present application, the first pump inlet 120 and second pump inlet 122 are in fluid connection with a common source of fluid stream evacuated from an equipment chamber (the interconnected chambers 10, 12 and 14).



Conrad teaches a molecular vacuum pump having a suction flange 10 and a gas outlet opening 11. *See, col. 3, lines 25-39.* A number of inlets 12, 13, and 14 are provided on the sidewall of the vacuum pump for admitting cooling gas into the pump.

Id. Examiner compares inlets 12 and 13 to the claimed first and second pump inlets, respectively.

Applicants respectfully submit that Conrad does not teach the claimed limitation “the first and second pump inlets are in fluid connection with a common source of fluid stream evacuated from an equipment chamber.” Conrad does not teach that the inlets 12 and 13 are in fluid connection with a common source of fluid stream. Conrad is silent about whether the



inlets 12 and 13 are connected to a common stream of cooling gas, or two separate streams. Furthermore, Conrad does not teach that the common source of fluid stream is evacuated from an equipment chamber. In Conrad, the fluid stream evacuated from an equipment chamber enters the vacuum pump at the suction flange 10, and leaves the same at the gas outlet opening 11. The inlets 12 and 13 admit cooling gas, but not the fluid evacuated from an equipment chamber by the vacuum pump.

Muhlhoff does not teach the claimed second pump inlet, let alone the limitation “the first and second pump inlets are in fluid connection with a common source of fluid stream evacuated from an equipment chamber.” As shown through out the drawings of Muhlhoff, the friction pump 1 has only one inlet, which is the suction flange 7. Since Muhlhoff does not teach the claimed second pump inlet, it does not teach the claimed limitation “the first and second pump inlets are in fluid connection with a common source of fluid stream evacuated from an equipment chamber.”

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981 (CCPA 1974). Since neither Conrad nor Muhlhoff teaches the claimed limitation “the first and second pump inlets are in fluid connection with a common source of fluid stream evacuated from an equipment chamber,” Applicants respectfully submit that claim 1 is not obvious over the cited references, either standing alone or in combination, under 35 USC 103(a).

It would not have been obvious for a person skilled in the art to modify Conrad by connecting the inlets 12 and 13 to a common source of fluid stream evacuated from an equipment chamber. To establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *See, MPEP 2143, Edition 8, Revision 2, May 2004*. In the claimed invention, because the first and second pump inlets are in fluid connection with a common source of fluid stream, and one of the first and second pumping sections is provided with a rotor having a helical groove, the capacity of the vacuum pump can be increased without a corresponding increase in size. Conrad offers no such suggestion or motivation as far as the need of increasing the pump capacity without compromising on the size is concerned.

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is not suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984). The intended purpose of Conrad is to provide the vacuum pump with an effective cooling system. *See,*

*col. 1, lines 62-64.* The purpose is achieved by providing the vacuum pump with the inlets 12 and 13 for admitting cooling gas into the pump. If Conrad were modified by connecting the inlets 12 and 13 to a common source of fluid stream evacuated from an equipment chamber, the cooling gas would have been denied entry into the pump at the inlets. This is particularly true if the equipment chamber is part of a mass spectrometer system, and there is a desire to avoid foreign objects mixing with the mass flow of the system.

As such, Applicants respectfully submit that claim 1, as amended, is patentable over Conrad and Muhlhoff under 35 USC 103(a). Independent claim 14, as amended, includes additional limitations similar to those added to claim 1. For the same reasons as discussed above, Applicants respectfully submit that claim 14 is also patentable over Conrad and Muhlhoff under section 103. Accordingly, claims 2-13, 15-33, and 37-52 that depend from claim 1 or 14 and include all the limitations recited therein are patentable over Conrad, Muhlhoff, and Hablanian under 35 USC 103(a), as well.

## **CONCLUSION**

Applicants have made an earnest attempt to place this application in an allowable form. In view of the foregoing remarks, it is respectfully submitted that the pending claims are drawn to a novel subject matter, patentably distinguishable over the prior art of record. Examiner is therefore, respectfully requested to reconsider and withdraw the outstanding rejections.

Should Examiner deem that any further clarification is desirable, Examiner is invited to telephone the undersigned at the below listed telephone number.

Applicants do not believe that any additional fee is due, but as a precaution, the Commissioner is hereby authorized to charge any additional fee required by the submission to deposit account number 50-4244.

Respectfully submitted,

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